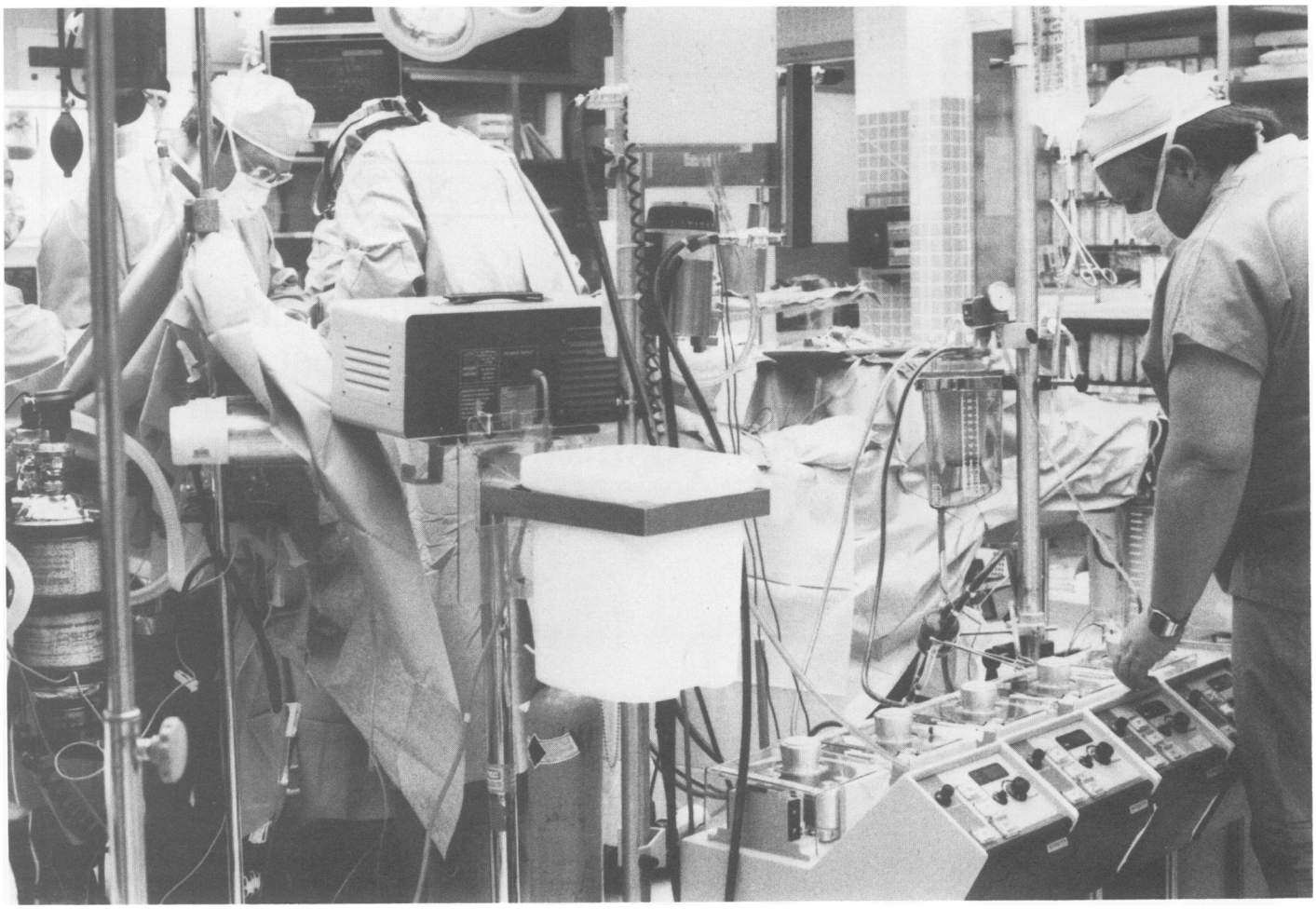

Photo by Susan Fuchs

New Sarns Safety Loop, invented by Phoenix perfusionist Jon Austin, right, and cardiovascular surgeon Cecil C. Vaughn, M.D., center, is part of the conventional heart-lung bypass blood pump, foreground. Austin monitors the machine as Dr. Vaughn and James G. Lawson, M.D., left, perform cardiac bypass surgery at Phoenix Baptist Hospital. Pat Lowell, R.N., far left, assists.

Phoenix Surgeon, Perfusionist Invent Lifesaving Blood Loop

When the warning sound from a conventional heart-lung bypass machine alerts its perfusionist to the presence of a low operating blood level, the medical technician has precious few split seconds—if any—to act. The perfusionist must instantly shut the machine down to stop air bubbles from entering the patient's body where they can cause brain damage or death.

Occasionally, at the instant the warning sounds, it is already too late

What surgeons and their perfusionists have needed since the first bypass machine was used in 1953 was a device which would automatically shut the machine down the instant an errant bubble was detected, a device to transcend the human limitations of even the most alert and responsive perfusionist.

Such a device could save the lives of the estimated 200 patients who die each year as a result of unavoidable air embolisms. Such a device could prevent neurological damage to the lucky patients who survive air embolisms.

And such a device has been invented by Phoenix cardiovascular surgeon Cecil C. Vaughn, M.D., and perfusionist Jon W. Austin, C.C.P. After five years of testing and approval-seeking, a version of their device, which they call a perfusion loop, was approved for marketing in early March by the federal Food and Drug Administration (FDA).

. . . could save 200 lives a year.

Although the loop's initial approved function during heart surgery is to gently evacuate

Continued

Organ Bank Opens First Bone and Tissue Center in Southwest

The Arizona Organ Bank at Good Samaritan Medical Center announces the opening of the Phoenix Tissue Bank, the Southwest's only complete bone and tissue procurement center. The new center is one of five facilities in the nation equipped to remove and process human bone and tissue under sterile conditions.

For the first time in the Southwest, the Phoenix Tissue Bank will provide complete processing capabilities to other procurement agencies. Prior to the opening of this facility, sterile tissue procurement in Arizona had to be conducted exclusively in hospital operating rooms and the tissue had to be shipped to the East Coast for processing. The Tissue Bank features a sterile procurement and processing rooms which allow for all tissue banking services to occur in the same facility.

"Having all the steps of this process under one roof means we can save time in providing bone and tissue for surgical procedures and at the same time control costs," said Tom Hagan, Technical Director of the Tissue Bank.

Bone and tissue is used for numerous surgical procedures including spinal fusions, replacement of bone loss due to trauma or cancer, repair of shoulder separations, ligament tears, total joint replacements and plastic surgery procedures.

The Phoenix Tissue Bank is located on the third floor of the Edwards Medical Plaza, 1300 North 12th Street, Suite 300, Phoenix.

Lifesaving Loop
(Continued)

blood from the main chamber of the heart, gently enough to avoid damaging fragile blood cells, the loop's ultimate purpose is to stop the flow of air bubbles which can cause stroke, neurological damage and even death.

The need for the loop was first articulated by Dr. Vaughn after he testified in a court case involving a Tucson heart surgery patient who died after a stroke which was caused by an undetected air bubble in the brain.

"There really ought to be a way to prevent that," Dr. Vaughn told Austin, with whom he has worked for almost 20 years. A few mornings later, Austin strolled into Dr. Vaughn's office with the prototype perfusion loop. "Jon is an engineering genius," Dr. Vaughn said.

The perfusion loop is an interconnected tube within a tube. Inserted into a conventional roller-type blood pump housing, its outer tube is similar to conventional blood pump tubing. Its inner tube, however, is very thin and collapsible. It collapses instantly if inlet pressure is less than zero, which happens when air bubbles are present. The tubal collapse prevents the pump from circulating both blood and air, which gives the perfusionist time to prevent the air embolism from reaching the patient.

> "Jon's an engineering genius."

Manufactured by Sarns, a division of the 3M Company, the initial device is marketed as the Sarns Safety Loop.

"Sarns refined our original design during the manufacturing process," Austin said, "but the concept is the same. It works like a straw which collapses under negative pressure and prevents anything from traveling through it.

The loop was first used in Phoenix by Austin and Dr. Vaughn, and is now available for use in hospitals nationwide. ■